

# **Habitat use and movements of juvenile chinook salmon in south Lake Washington, 2003 investigations**

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## **ABSTRACT**

In 2003, we continued our assessment of the habitat use of juvenile Chinook salmon (*Oncorhynchus tshawytscha*) in the nearshore areas of Lake Washington. Juvenile Chinook salmon are found in Lake Washington between January and July, primarily in the littoral zone. Little is known of their habitat use in lakes, as ocean-type Chinook salmon rarely occur in lakes throughout their natural distribution. Research efforts in 2003 focused on juvenile Chinook salmon distribution, shoreline structure use, residence time and movements, use of Johns Creek (a nonnatal tributary), and microacoustic tracking. We repeatedly surveyed nine index sites in south Lake Washington to examine the temporal and spatial distribution of juvenile Chinook salmon. From February to May, the two sites closest to the Cedar River had substantially higher densities of Chinook salmon than the other sites. Overall, the abundance of Chinook salmon displayed a strong, negative relationship with the shoreline distance from the mouth of the Cedar River to each site. Juvenile Chinook salmon were present on Mercer Island on each survey date. We conducted a field experiment at Gene Coulon Park to test the effect that small woody debris (SWD) and overhanging vegetation (OHV) have on Chinook salmon abundance. The experiment was conducted during two time periods; late March–early April and early May. During the early period, substantially more Chinook salmon were present during the day in the shoreline sections with SWD/OHV than sections with only SWD or sections that were open. At night, the abundance of Chinook salmon was highest in the open sections. During the May period, little difference was detected between the shoreline sections. Overall, overhanging vegetation appears to be an important habitat element, especially for small juvenile Chinook salmon. Residence time observations were conducted during a three-week period in April at Gene Coulon Park. Little movement of Chinook salmon was observed; however, the number of marked Chinook salmon decreased substantially from the beginning of the study period. We continued to monitor Johns Creek, a small nonnatal tributary near the mouth of the Cedar River. Large numbers of Chinook salmon were present, similar to 2002. Tracking of microacoustic tags with a fixed array was conducted on May 22–23. Two juvenile Chinook salmon (94 and 96 mm FL) were tracked for 18 hours. Throughout the tracking period, the fish remained in shallow water (less than 4 m depth). At night the fish were less active and remained in very shallow water that was less than 1.5 m depth.